SUMMARY REPORT
FARSON PIVOT EVALUATIONS
SUMMER 2003

Overview

During the summer of 2003, pivot evaluations were conducted on 17 center pivot sprinklers in the Farson – Eden area. These evaluations were conducted by NRCS staff from the Farson Field Office with some help from other NRCS personnel from the team area. The evaluations were conducted in accordance with the procedures in NRCS National Engineering Handbook, NEH Part 652, Irrigation Guide, Chapter 9 and ASAE Standard S436.1, Test Procedures for Determining the Uniformity of Water Distribution of Center Pivot and Lateral Move Irrigation Machines Equipped with Spray or Sprinkler Nozzles.

Discussion of Evaluations

For each of the evaluations conducted, the coefficient of uniformity based on the modified formula of Heerman and Hein was calculated for each of the radial lines of collection lines. An average coefficient of uniformity was then calculated as the average of the two lines. Figure 1 shows the average coefficient of uniformity for the systems evaluated.

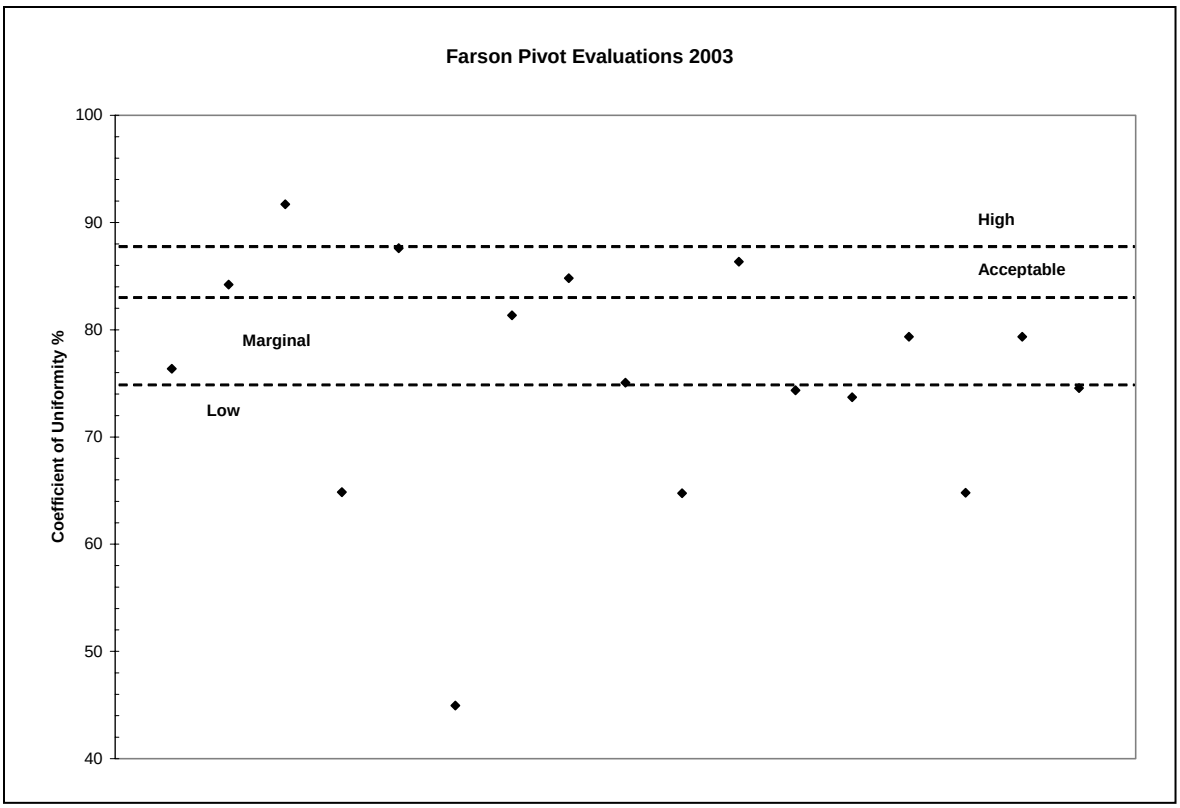

Figure 1 – Average Coefficient of Uniformity for Systems Evaluated

One of the difficulties encountered in completing the pivot evaluations, was the wind that occurs regularly in the Farson area. Most of the evaluations were conducted with wind speeds in excess of the recommended maximum wind speeds. The evaluations were split into four categories based on the coefficient of uniformity as follows. Coefficients of uniformity greater than 88% were considered high. Coefficients of uniformity between 83% and 88% were considered acceptable. Coefficients of uniformity between 75% and 83% were considered acceptable but marginal. Coefficients of uniformity below 75% were considered low. Figure 1 also shows where each of the systems would rank based on these criteria. Five of the systems evaluated would be in acceptable or greater ranking. Five systems were within in the acceptable but marginal category and seven systems in the low category.

The systems evaluated had been installed between the years of 1989 to 2001. Figure 2 shows the average coefficient of uniformity plotted according to the year the system was installed.

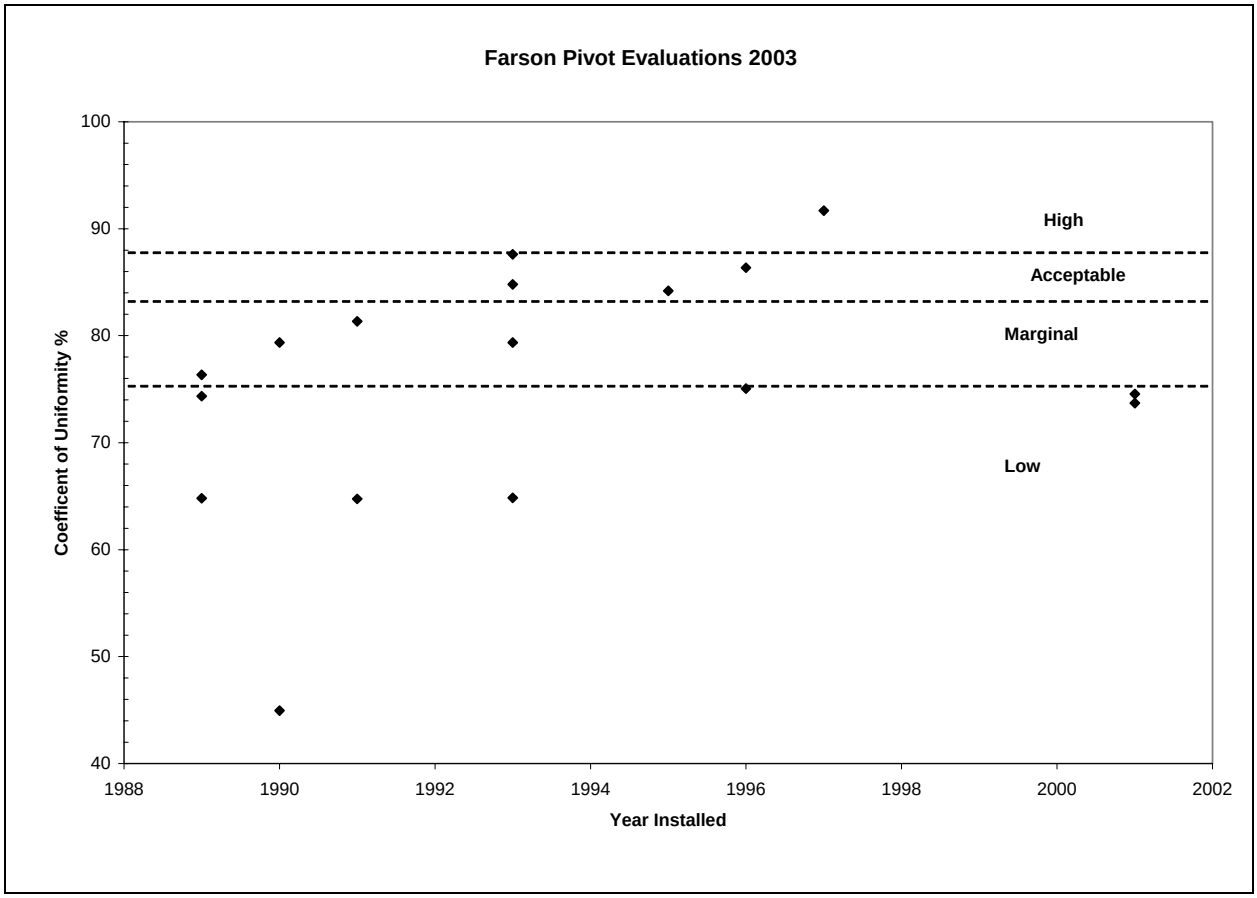

Figure 2 – Average Coefficient of Uniformity by Year Installed

It should be noted that the coefficients of uniformity calculated for system that had been in use longer than 10 years, were all in the marginal to low range. However, there were some new systems that fell in the low uniformity range. On the system with the lowest coefficient of uniformity, many of the nozzles had been replaced with nozzles that were close in size but not exactly the same as the original nozzling package.

Several different types of sprinkler packages were installed on the systems evaluated. Figure 3 shows the average coefficient of uniformity plotted versus the sprinkler package.

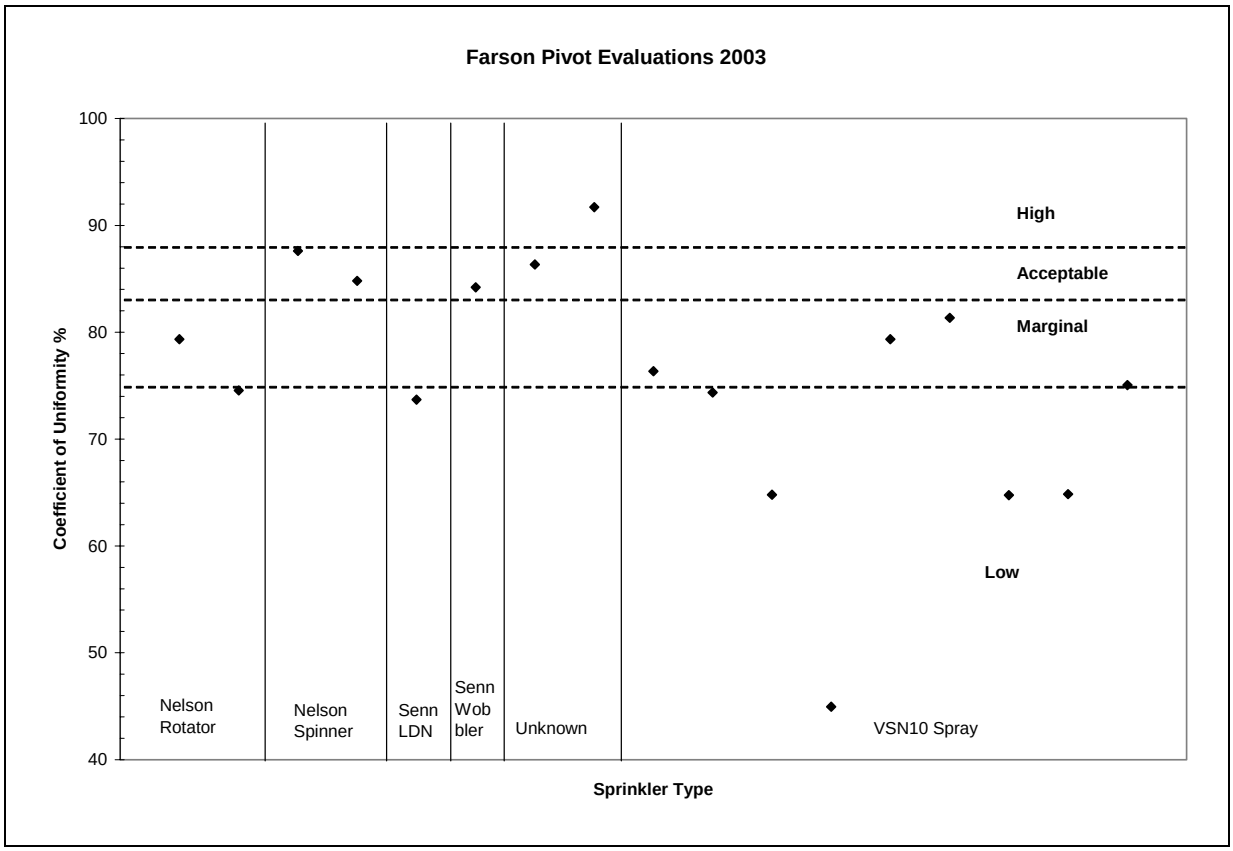

Figure 3 – Average Coefficient of Uniformity by Sprinkler Type

All of the systems evaluated with the low pressure spray nozzle, which is shown as VSN10 Spray, had coefficients of uniformity in the marginal to low category. This could be a function of both the type of sprinkler and the age of the system, as many of the older systems evaluated had the low pressure spray nozzles. The low uniformities shown with the low pressure spray may also be influenced by the windy conditions prevalent in the Eden Valley.

Conclusions and Recommendations

Individual results of the evaluations will be provided to the owners of the center pivots evaluated. Many of the recommendations will be specifically for that system evaluated. Some of the irrigators need to make sure that the screens, regulators, and nozzles are cleaned regularly. A couple of the systems evaluated need to have work performed on the pumping plants, as they were not producing the pressure and flow required. Some of the systems may need to be renozzled due to the age and wear on the nozzles and pads. The age of the system appears to be a factor in the uniformity of the system, and irrigators should consider replacing their nozzles after 10 to 15 years of use. The systems will also require some maintenance and repair on the pumping plants.

Big Sandy Unit

2001 Monitoring and Evaluation Report

I. INTRODUCTION

1. Executive Summary

Objectives of the Big Sandy Unit of the Colorado River Salinity Control Program include: treatment of 15,700 acres with improved irrigation systems; reduction of salt loads by 52,900 tons/year; conservation of 20,470 acre-feet of water; hayland production increases from 1.6 tons/acre to 4 tons/acre; and replacement of any wetland wildlife values foregone estimated at 860 acres of Type 3,4, and 10 wetlands (USFWS Circ. 39). To date (fiscal year 2003 figures), 10,607 acres, or 67.5% of the original goal, have been treated resulting in a salinity reduction of 42,319 tons/year, or 80% of the goal. Consequently, prevention of16,275 acre-feet of deep percolation has been achieved. Economic studies and anecdotal information from producers indicate that production indeed has increased as predicted on the acreage where irrigation improvement has occurred. Wetland wildlife values have been replaced in current and proportionate amounts with the exception of one wetland type. It is anticipated that this replacement will be appropriate for the impacts caused by the project.

Cost-effectiveness. The estimated cost per ton of salt saved for fiscal year 2003, using the following formula, is $56.71ton of salt saved. Note: $64,000 was spent of FA dollars on wildlife replacement project. These include 5 acre wetland development and windbreaks and grass seeding. These dollars are not figured in the cost per ton saved.

FA ($234,608) + TA (234,608 * 0.67) = total federal expenditure ($391,795) * amortization (.0773 over ears) = Total Annual Cost ($30,286) dived by total Annual Salt Saved (534 Tons) = Cost/Ton of Salt Saved ($56.71)

Contract activity. All open contracts show evidence of activity.

Irrigation Erosion Control. Projects that show erosion control benefits are rewarded using the Local Work Group's Ranking Worksheet.

Educational Program. No change from 2001 Monitoring and Evaluation Report.

Monitoring and Evaluation Report. No active monitoring conducted for 2003 as per the orginal M and E plan. Limited flow and water quality data have been collected by USGS and the Sweetwater County Conservation District along the Big Sandy River, but data is not available at the time of this report. The Sweetwater conservation District did cooperate with USGS and collected stream flow data on the Big Sandy at Gasson Bridge. They also collected conductivity data at this guage. This data will be analyzed with the flow data when receive.

NRCS ran efficiency test for sprinkler systems in the Big Sandy Project area. The report on this monitoring is attached.

Replacement of Wildlife Habitat Values Foregone. Three wildlife projects (one

wetland creation and two upland tree planting) were planned and funded in fiscal year 2003. The wetland project is a 2 acre wetland with surrounding vegetation to total about 4 acres. The tree plantings are approximately 5 acres. Brush treatment is being applied and an additional 35 acres for sage grouse habitat enhancement.

2. Overview and Methodology

The contents of this report are an addendum to the 2001 Monitoring and Evaluation Report for the Colorado River Salinity Control Program (CRSCP)- Big Sandy Unit.

4. Climate Conditions

The water supply for 2003 was below average. In general, spring was characterized by warm and dry conditions. Irrigators on the project were limited in their irrigation water supply. There was not an adequate supply of irrigation water for most sprinkler irrigators and all flood irrigators. Water was turned into the canal system the 5th of June and the last irrigation occurred on the 17th of August. The irrigation district reported being able to deliver water to 12,718 acres with a total deliver of 22,049 acre feet of water in 2003. During a similar period of drought prior to the project the Irrigation District delivered water to only 9683 acres.

6. Scope and Status of CRSC Program Implementation

At the end of the 2003 irrigation season there were a total of 142 improved irrigation systems installed and operating. Table 1 shows the status of program implementation.

Table 1. Program Implementation.

	Item / Practice	Unit(s)	Current FY	Cumulative
1.	Funding (TA & FA)	Dollar	234,608	11,489,053
2.	Acres under contract	Acres	191	11,870
3.	No. contracts	Number	9	147
4.	CRSC cost shared			
	A. Pipeline (on-farm)	Feet	5280	225,216
	B. Sprinkler system	Number	4	130
		Acre	191	10,602
	C. Improved surface system	Number	0	9
		Acre	0	188
	D. Regulating reservoirs	Number	2	64
		acre feet	3	81
5.	CRSC non-cost shared			

	A. Irrigation Water Management	Acre	525	10,790
6.	Wildlife Habitat Created			
	A. Wildlife wetland habitat management	Acre	2	123
	B. Wildlife upland habitat management	Acre	50	171